

starching, as otherwise a gauze would be produced deficient, if not almost free, from the cyanide of mercury.—*Lancet*, February 22, 1890.

STROPHANTHINE AND OUABAIN.

At a recent meeting of the Académie de Médecine, DR. PANAS made some remarks upon these new local anæsthetics. Ever since the discovery of the remarkable local action of the salts of cocaine, he said, chemists have been trying to obtain similar effects from other organic compounds. The hydrochlorate of erythrophlein was believed to be a local anæsthetic in the eye, but its action is slow and unreliable, and it is apt to set up a conjunctivitis; other substances have given no better results. The latest which have been tried, ouabaine and strophanthine, are said, in weak aqueous solution, to produce complete and prolonged anæsthesia in the conjunctiva and cornea of animals, with a slight contraction of the pupil, followed by dilatation. Dr. Panas has introduced these drugs into the eyes of rabbits and men, and concludes that ouabaine, although a good local anæsthetic for the rabbit, does not produce this effect in mankind, while strophanthine, although a fairly good anæsthetic, is too irritating a substance to use in preference to cocaine, which is, in fact, still without a rival.—*La Semaine Médicale*, February 19, 1890.

ANNIDALINE, A SUBSTITUTE FOR IODOFORM.

This new substance, which has been brought forward by MESSINGER and NORTMANN as a substitute for iodoform, is probably a combination of two molecules of thymol with three atoms of iodine—in other words, a triiodide of dithymol, whereas aristol is a diiodide of dithymol. It is a reddish-brown powder, which may be kept for several months, at least with proper care. It is decomposed by the action of light and moisture, giving off iodine and turning yellow. It is insoluble in water, slightly soluble in alcohol, readily so in chloroform and ether.—*Journal de Médecine de Paris*, February 8, 1890.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D., F.R.C.P. LOND.,

PHYSICIAN-IN-CHIEF OF JOHNS HOPKINS HOSPITAL, BALTIMORE.

AND

J. P. CROZER GRIFFITH, M.D.,

INSTRUCTOR IN CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

INFLUENZA.

The journals are still full of this subject, bringing forward somewhat that is new, and much that is confirmatory of what has been already recently written regarding it.

STRÜMPPELL (*Münch. med. Wochenschr.*, 1890, No. 6, 90) calls attention to the differences which exist in the symptoms of the affection as seen at different places, and to the importance of exact descriptions of any local peculiarities witnessed. In the author's experience the symptoms of the disease have shown a remarkable similarity to those attributed to the cases in the epidemic of 1830-32. As to the existence of a specific cause of the affection, and the nature of this, we are still in doubt; and only the discovery of it will clear up the diagnosis in many instances. Many cases of simple catarrhal inflammation, of herpetic fever, and the like cannot be distinguished from it.

The multiform nature of the disease is characteristic, and permits the divisions of the symptoms into different classes. It must be borne in mind, however, that transitional forms exist.

I. First among the typical varieties may be mentioned the Typhoid form, in which the general symptoms predominate—such as fever, languor, pain in the joints, depression, headache, loss of appetite—while the local symptoms are absent or slight. The general appearance of the disease may be so severe in this form that the resemblance to typhoid fever is great. The sudden beginning is, however, characteristic of influenza, as are the severe lumbar and sacral pains. A pressing pain in the eyes is a very common symptom in influenza. Severe headache and nose-bleed are common in both affections. Strümpell has almost never detected an enlargement of the spleen in influenza, and delirium was rare.

II. The second form is the Catarrhal, with especial involvement of the respiratory apparatus, and with more or less of the general symptoms. The greatest number of cases belonged to this category. Not seldom there was a barking cough, reminding one of that of measles. Sometimes the finer bronchial tubes were the only part attacked; in other cases coryza or hoarseness were noticed, while the lungs were entirely uninvolved. Injection of the conjunctiva may be present, but well-marked conjunctivitis was rare in his experience.

III. The Catarrhal form, with especial implication of the digestive system. Of this the author saw but comparatively little, the commonest being the combination of angina with the general symptoms. Only exceptionally did he observe severe and persistent gastric and intestinal disturbances. Vomiting was frequent, but is rather to be considered one of the general symptoms.

IV. The Rheumatoid form includes those cases in which the most violent pain in the neck, lumbar, and sacral regions and in the extremities are almost the exclusive symptoms. The pains appeared to be sometimes in the nerve-trunks, oftener in the muscles. Sometimes they were so severe that the patients continually and loudly complained of them, and could not tell in what position to lie. Evident paresis was present in the painful region in some instances.

These forms scarcely ever exist in their purity, and some evidence of catarrhal affection of the respiratory apparatus and of muscular pain is almost always present. Influenza is very apt to relapse, and in this case a different form may be present in the second attack from that seen in the first.

The author observed the very sudden commencement of the disease in very few instances. As a rule, some days were required before the full violence of the affection was developed. Not infrequently there were some prodromal

symptoms, consisting generally of evidences of fever, violent headache, general weakness, and pain in the lumbar and sacral regions. Later the other symptoms of the disease appeared. The comparison of a large number of temperature-curves showed the following principal forms: 1. In the mild cases a slight, irregular fever with an evening rise, lasting a half to one week. 2. In the severer cases a temperature at first rising rapidly to about 104° F., remaining at this one to two days, diminishing for several days, so that there was but little fever or none, then going up again for several days, and rapidly sinking to normal and remaining there. 3. A curve which remains high from the beginning for four or five days, and then falls by crisis. This curve appears in the cases with severe general symptoms, especially if attended by diseases of the lungs. It is difficult to distinguish these cases from genuine pneumonia. 4. The most persistent fever was seen in the cases in which widespread lobular pneumonia or pleuritis developed. Here the temperature-curve resembled the typhoid fever curve, lasting three to four weeks, and ending by lysis.

Prominent among the complications is pneumonia, which Strümpell regards as in most cases not due to the original germ of influenza, but as a combination of the two diseases—an instance of mixed infection. The complicating pneumonia was usually, in his experience, diffuse, lobular, catarrhal, affecting the lower part of one or both lungs. The expectoration was generally mucopurulent. Often there was no evidence of pulmonary consolidation. The development of a large pleural effusion was a not uncommon complication in the author's cases. In two instances nephritis occurred. The author believes this analogous to the development of nephritis in the other infectious diseases.

Recovery was quite slow even in the entirely uncomplicated cases, as the patients often for weeks complained of weakness which they could not overcome. Relapses were frequent. The treatment was purely symptomatic. Death occurred in two cases; in neither of them from the disease itself.

DUFLOQC (*Rev. de Méd.*, February, 1890) divides influenza into three forms, of each of which he reports instances in detail:

I. The Nervous form. This variety was in his experience much the most frequent, but at the same time the least grave. In some of these cases there was pain in the head of varying character and intensity; in others lumbar pain was much the most prominent symptom. In some cases there were fever and chilliness, or attacks of syncope, or excessive weakness.

II. The Thoracic form became more and more prominent in Paris as the epidemic advanced. It may be divided into several classes:

A. The Respiratory form, including—1. Those in which coryza and conjunctival irritation mark the onset of the disease. 2. Those in which involvement of the larynx is the earliest symptom, or in which hoarseness develops as the fever and pain are disappearing. In other instances the symptoms of œdema of the glottis appear. 3. The numerous instances in which tracheitis or a common cold develops. 4. The very frequent cases in which bronchitis exists, usually of slight degree. 5. Those in which very marked dyspnoea accompanies moderate bronchitis. 6. Those complicated by pleuro-pulmonary congestion, and being among the grave cases of grippe. The symptoms of this congestion in grippe are the same as those seen apart from it. It may arise in the course of the influenza or during the convalescence; and may be

double or only on one side. It is peculiarly insidious in its onset, and in some cases only repeated and careful examination reveals a small patch of congestion. Often there is but little cough, and the expectoration is absent or not characteristic. The râles are not like those of ordinary pneumonia, being even more fine, dry, and superficial, and often only evident on coughing. The presence of some impairment of resonance shows that it is not bronchitis; the diminution of vocal fremitus, that the condition is not pneumonia; and the presence of fine râles, that it is not pleurisy with effusion. 7. The cases in which actual pneumonia develops. These are instances of a mixed infection with two species of microbes. The existence of the influenza predisposes to the development of the pneumonia. This latter has certain special characters. It is often insidious in its onset and has but little pain in the side, and an absence of characteristic expectoration.

B. The Cardiac form. Instances of this were not frequent in the author's experience. There are several varieties of it. 1. In the first there is an acceleration of the pulse from the beginning of the disease. In cases of the nervous form there is often a rapid pulse, even after the fever has diminished. 2. There may be cases exhibiting a pseudo-angina pectoris, and the author reports an instance of this sort. 3. When grippe is complicated by pulmonary conditions there may be evidences of great cardiac weakness appearing.

III. The Gastro-intestinal form. 1. It is not uncommon to see instances of the nervous variety exhibiting intense headache and yet with good appetite, perfect digestion, and clean tongue. 2. In other cases nausea and vomiting occur at the onset of the disease, and appear to be connected with the nervous system. 3. In a third group there is in addition a loss of appetite and a condition of coated tongue removed by the administration of a purgative. 4. In other instances the digestive disturbance is more severe, and the anorexia remains five or six days after the disappearance of the acute symptoms. 5. There are certain patients who suffered with prodromal symptoms, consisting of headache, nausea, vomiting, progressive loss of appetite, restless sleep, dreaming, general feebleness, accompanied often by vertigo, fever, epistaxis. The diagnosis is not always easy between grippe and typhoid fever. 6. Sometimes the symptoms are still more pronounced, and there is blood in the stools, persistent diarrhœa, evident emaciation, and very tardy return of appetite. 7. The author has seen one instance of vomiting and diarrhœa so severe that the attack might be called choleraiform.

Eruptions: He has observed two instances of a scarlatinal eruption in influenza and one of a morbilliform rash. Other cases showing similar eruptions have been reported to him.

As regards the course and termination, the affection may last but one or two days, but the convalescence even then is not complete for from four to eight days, the patient remaining weak with lumbar pain, susceptible to cold, and liable to develop respiratory affections. Simple grippe is usually benign, but pulmonary complications are apt to develop at about the fourteenth to sixteenth day, after the patient has been out of the house.

Comparisons of the health statistics of Paris for the first week of the years 1889 and 1890, respectively, show that the number of cases of pulmonary disorders was greatly in excess in the latter year.

There is no doubt that the disease is of an infectious nature, but the method of its propagation is a disputed point. The author believes that the air is certainly the means of transporting the still unknown germ. He relates the history of its mode of propagation in a certain village, as well as several other instances which appear to prove that it is communicated from person to person. This communication may be by means of furniture or clothing. He takes the view that the external air carries the infectious elements into a certain locality, and that those first taken sick then appear to become centres for the spread of the disease. It is therefore both epidemic and contagious.

According to a report appearing in *Le Mercredi Medical*, January 29, 1890, Gorecki has observed amblyopia, weakness or spasm of the accommodation, and paralysis of convergence in influenza; Parinaud has seen ophthalmic migraine; Valude paralysis of the external muscles; Gillet various subjective disorders of the eye; Adler has seen keratitis of a special form, iritis, and glaucoma; Reynier, Dreyfuss, and Schwabach have observed otitis with varying frequency, and Gottschalk four cases of metrorrhagia brought on by the onset of influenza. Two of these latter were accompanied by dysuria also.

BOUCHARD (*Le Mercredi Medical*, January 29, 1890), writing on the "Contagion of Grippe and its Complications," says that he had previously expressed the belief that the grippe was not contagious. He has, however, had cases reported to him which would appear to prove that it spread from person to person in a city by direct contagion. These facts are not in accord with what we know of the suddenness of its dissemination, and of the influence of meteorological conditions upon it. He does not believe that there is any specific microorganism the cause of the disease, as he has found three different species present in it. His opinion is that some one of the ordinary microbes—different in different cases—acting upon a person whose organism has lost the power of resistance, becomes pathogenic and produces the disorder. He is still in doubt, therefore, whether the affection is contagious or even infectious.

DUPONCHEL (*Ibid.*), in speaking of the "pneumonia of influenza" ("*pneumonie grippale*"), expresses the view that it is not a concomitant attack of pneumonia independent of influenza, but that it is one of the numerous manifestations of the latter disease. He bases this opinion on the fact that, though the physical signs in three cases observed by him were the same as those seen in ordinary acute pneumonia, the expectoration was not rusty, but liquid, mucous, and more like that of a bronchitis. There had been pain in the side without initial chill. The course was not like that of ordinary pneumonia, but in successive exacerbations, more like that of bronchopneumonia. The duration was about three weeks, the decline gradual and accompanied by abundant perspirations, various nervous troubles, and extreme languor. No encapsuled diplococci could be found in the sputum.

VAILLARD (*Ibid.*) presents the following *résumé* of the results of his bacteriological studies on influenza.

1. In those who died of grippe a streptococcus was found in the blood, spleen, lungs, or liquid effusions. Three times in four this microbe was entirely alone; in one case the staphylococcus was also present.

2. In empyema consecutive to influenza the streptococcus was the only one present.

3. The same streptococcus was constantly present in the expectoration of persons suffering from grippe. As a result of this constancy, one is induced to believe that the microorganism plays an important rôle in the pathogeny of the affections occurring during influenza. Whether or not it is the cause of the disease itself, cannot yet be determined.

PSYCHOSES AFTER INFLUENZA.

KRAEPELIN (*Deutsche med. Wochenschr.*, March 13, 1890) reports a series of eleven cases in which various psychoses developed after influenza had run its course. The immediate cause appeared to be rather the general weakness of the organism, though it is possible that the long period of depression seen in the disease is due to the continuing action of the poison, and that this may be etiologically connected with the mental disturbance. Three groups of the psychoses were evident. The first contained the cases of simple psychic depression, shading off into melancholia, or with a hypochondriacal tendency. Another case, nearly allied to this group, exhibited delusional ideas in addition to melancholia—what might be called a depressive delusional insanity. Cases of the group are entirely analogous to those which occur after long continuous infectious diseases, after articular rheumatism, whooping-cough, and typhoid fever.

The second group of cases, as observed by him, resembled more those psychoses occurring after pneumonia and the acute exanthemata, and in the puerperium. They may be considered acute conditions of exhaustion, "collapse delirium," consisting of a rapidly developing confused excited condition, with numerous illusions.

In one of these cases the condition was more severe, reaching a protracted state of asthenic delirium, a hallucinatory confusional insanity. Another of the cases of this group exhibited typical mania, with a well-developed condition of depression, and with a course much longer than in collapse delirium.

A review of the cases so far discussed shows that in none of them did the bodily disease appear to be the only cause of the mental disorder. In all there existed certain other factors which either produced a certain predisposition, a diminution of the mental and bodily power of resistance, or, *vice versa*, gave the last needed impulse to the production of a psychosis in the person already predisposed by the occurrence of influenza.

The first condition was the commonest in the author's observation. Under this heading the author enumerates preëxisting anæmia, pulmonary, gastric, and cardiac affections.

The second condition was illustrated by the occurrence of erysipelas, the puerperium, and great excitement immediately after the recovery from influenza.

It would, therefore, appear that influenza alone is not sufficient to occasion development of a psychosis. And, as cases show that influenza often only gave the last needed impulse to this development, it follows that the form of psychic disturbance is not greatly dependent upon influenza. This was especially true of the third grade of cases, in which the absence of dependence

was very plainly manifest. In one of these, for example, there developed a typical delirium tremens in a man who had been addicted to alcoholic excess.

The treatment of the psychoses after influenza is, naturally, chiefly of a tonic sort. Rest in bed is to be enjoined, combined with prolonged bathing or packing. To procure sleep, the bromide preparations may be employed in moderate doses, or sulphonal, or hyoscin in bad cases. Abundant nourishment is indicated; stimulants if collapse is feared. In this way, most cases will be aided to recovery, unless fatal collapse occurs.

A CONTRIBUTION TO THE CURATIVE ACTION OF ERYSIPELAS IN MALIGNANT TUMORS.

KLEEBLATT (*Münch. med. Wochenschr.*, February 18, 1890) refers to the fact that the therapy of malignant growths is still of but little avail in spite of the progress made in their surgical treatment. It has also been repeatedly observed that an intercurrent attack of erysipelas has produced the diminution in size or even the disappearance of such growths. The question has, therefore, been raised and variously answered as to the justifiability of artificially producing erysipelas in desperate cases. Ricord and Depres, in France, were the first to carry this procedure into execution; and Busch, in Germany, did the same with astonishing results. Fehleisen having succeeded in obtaining pure cultures of the cocci, material for producing the disease was always at hand. He reported seven cases in which inoculation had been performed. Kleeblatt reports in detail three interesting cases of malignant growths in which he employed inoculation with the cultures of Fehleisen's coccus. The first was that of a man of fifty-four years, suffering from lympho-sarcoma of the left tonsil with enlargement of the neighboring lymphatic glands. The tonsil was removed by operative interference, and the glands scraped or taken out. The patient did well after the operation for a time, but the growth then returned in the same situation, as also in the other tonsil and in numerous glands. Fowler's solution was given by injection, and as a result several abscesses formed, from one of which an attack of erysipelas started. The result of this attack was a notable diminution in the size of the different tumors and a great improvement in the condition of the patient. After a time the disease began again to increase, and the author inoculated the patient with Fehleisen's coccus. The attack of erysipelas which was the result of this produced a great diminution of some of the growths and a total disappearance of others. Nevertheless a renewed development of the growths occurred in a short time, and was followed by the death of the patient.

A second case suffered from lympho-sarcoma of the nasal cavity, and a tumor extending from the mastoid process to the angle of the lower jaw. Inoculation with erysipelas was performed in this case too, and was followed by a complete and what appeared to be a permanent disappearance of the disease.

A third case, a patient with a small lymphadenoma, developed erysipelas twice spontaneously. The first attack was followed by a diminution in the size of the growth, and the second by its total disappearance.

The author believes that the cocci penetrate the tumor, multiply there, and produce destruction of the cells of the growth by a direct action on them.

Or, if it is true that a special microbe is the cause of the development of carcinoma or of sarcoma, then the cocci of erysipelas must wage war directly with them, destroying them, and bringing about the death of the cells secondarily. He believes, too, that the salutary effect of the erysipelas depends not on its local action alone. The high and often long-continued fever tends to bring about a fatty degeneration of the cells. In other febrile diseases, as typhoid and scarlet fevers, and in cholera, the disappearance of sarcomata, lymphomata, and adenomata has been observed.

ACROMEGALIA.

Another case of acromegalia is reported by PÉCHARDRE (*Rev. de Méd.*, February, 1890). The patient, a woman of forty-two years, was without family history bearing upon the development of the affection. There was likewise nothing abnormal to note in her previous history, except the occurrence of rheumatism, limited to one shoulder, and probably phlebitis of the left leg. She had always had a small goitre, as had one of her sisters.

Seven years before seen she suffered from sudden suppression of menstruation, accompanied by abdominal and lumbar pain. The pain disappeared after some weeks, but she never menstruated afterward. In the course of about six months she began to experience general langour and dyspeptic phenomena. It was about six months after this that she noticed that her hands, feet, and head and face, had grown larger, and that her physiognomy had so altered that many persons did not recognize her. During these six months she had experienced a gnawing pain in the hands, coming on at three o'clock at night and lasting until eight or nine in the morning. The pains were severe, and prevented sleep. The arms became weak, and the fingers clumsy. During the years following the patient noticed a constant growth of the hands, feet, and head. The painful sensation in the hands gave way to erratic and often violent pain, lasting hours or days, and occurring principally in the calves, thighs, and shoulders. The dyspeptic disorders diminished, langour was still present at intervals, vision was slightly impaired, hearing also, due probably to a purulent catarrh. There was slight cardiac palpitation and some oppression.

When examined, the most striking feature was the enormous size of the head, with very prominent frontal, parietal, and occipital protuberances. The face was also hypertrophied in certain parts, the nose being enormous, and the lower jaw having grown to such an extent that when the jaws were closed the lower incisors were separated $\frac{1}{4}$ inch from the upper ones. The teeth were separated from each other in the gums. There was very pronounced macroglossia, interfering to some extent with talking and with mastication. The hands, too, were much enlarged in breadth and in thickness, though no longer than normal; the fingers being round and thick. The thenar and hypothenar eminences were bulging and constituted marked prominences; the palmar folds were very evident. The feet were enlarged in a similar manner, the hypertrophy of the great toes being remarkable. All the bones of the foot and leg appeared to be thickened. The large size of the abdomen and the fat on the buttocks prevented the positive determination of the condition of the pelvis, but the crests of the ilia appeared to

be somewhat enlarged. Nothing else abnormal could be detected in the trunk.

The patient suffered from continual languor and weakness. The size of the fingers produced awkwardness, and there were stiffness and at times tingling, but never any symptoms of paresis. There were some erratic and transitory pains in the lower extremities and in the lumbar region. The intelligence was normal. The patient suffered from profuse perspiration coming on after the least exercise. No other symptoms presented themselves bearing upon the disease.

INTRATRACHEAL INJECTIONS OF CREASOTED OIL.

DOR (*Rev. de Méd.*, February, 1890) terminates an exhaustive article on this subject with the following conclusions:

1. Intratracheal injections of creasoted oil, of the strength of 1 in 20, are admirably borne by the majority of patients. 31 minims may be injected twice a day; this equalling 3.1 grains of creasote. The author has never observed any complications provoked by the use of the injections; the patients never had hæmoptysis, fever, or stitch in the side which could be attributed to the medicine, and digestive troubles were not produced analogous to those seen when creasote is administered internally.

2. Experiments on animals showed that the oil reached the alveoli, and stayed there fifteen days, and that it is unfitting to make use of glycerine or vaseline as an excipient, but that olive oil, which has been sterilized by boiling, should be employed.

3. The injections of 31 minims of the oil twice daily should be practised during many months. It is necessary to auscult the patients frequently, and to make them take the position necessary to allow the oil to penetrate to the diseased portions of the lungs. It is often possible to determine whether the oil has reached the part by the production of bubbling râles.

4. In the majority of cases under the influence of this treatment, expectoration diminished, pain in the side disappeared, appetite returned, and weight increased. The auscultatory signs were modified somewhat.

5. It is principally tuberculous patients of the first or second degree who are benefited by the treatment. For patients with numerous cavities, it would be better to choose an antiseptic more powerful than creasote; and camphorated naphthol appears to answer this purpose. A solution of one-tenth strength is tolerated by the trachea, but the author has not studied the influence of this substance on foci of suppuration in the lungs.

THE GASTRIC MUCOUS MEMBRANE IN SECONDARY DISEASES OF THE STOMACH.

STINTZING (*Munch. med. Wochenschrift*, February 18, 1890) calls attention to the frequency with which the stomach is secondarily affected in all severe diseases. The chief complaint of consumptive patients, and those with heart disease, is often of gastric disturbances; and in infectious and nervous diseases appetite and digestion are often much impaired. It might almost be said that no one dies without disordered action of the stomach, apart from cases of sudden death. It is not certain whether these dyspeptic

disorders are functional or organic. In any case the secondary affections of the stomach demand careful consideration, since with a better knowledge of them we shall understand better their therapy, and the difficult matter of appropriate sick diet. Stintzing has already published some observations on the anatomical changes observed in such secondary diseases of the stomach, as nervous dyspepsia and the dyspepsia of phthisis and of heart disease, and has shown that severe organic disturbances may take place in them. As a further contribution to this subject he reports several cases which he has recently examined. The first was a case of acute pulmonary tuberculosis in a girl of twenty-three years, in which death took place in the course of a few weeks. The epithelium of the rugæ was partly degenerated and in many places exhibited a cuboidal appearance or had suffered destruction in the mucus covering the surface of the membrane. The very great hyperemia of the upper epithelial layer was particularly striking. But few leucocytes were found penetrating the upper layer in comparison with the number seen in chronic cases, but the small-celled infiltration and the hypertrophy of connective tissue were just as great. The lumen of the glands was moderately widened and contained mucous masses but no cells. The parietal cells were of normal size and form, but frequently granular and not sharply outlined. The chief cells were likewise poorly defined and did not stain well. "Food cells" (*mastzellen*) were found between the glands. The *muscularis mucosæ* contained no pigment.

In another case, that of a man of twenty-five years, dying from hypertrophy and dilatation of the heart, with symptoms of great passive congestion, histological changes of a high degree were found. In all layers of the mucous membrane there was a great increase of connective tissue, and the tubular glands were much diminished in number and much branched. The glands were for the most part widened, their cells flattened, and the parietal and chief cells scarcely to be distinguished from each other, and the former in some localities were diminished in number and marked by the accumulation of nuclei in one cell. The "food cells" were especially numerous, situated chiefly in the inter- and subglandular connective tissue, and penetrating between the tunica propria and the glandular cells, and even between these cells themselves. There was rather scanty pigment in the *muscularis mucosæ*.

Two other cases were examined, one of uncomplicated typhoid fever, the other complicated by heart disease. In the first there was extensive degeneration of the epithelium of the glands and of the superficial layer, together with a decided increase of the connective tissue. The glands were dilated, their mucous membrane in folds, and their lumen filled with mucus and the remains of leucocytes. In the other case the number of the parietal cells was diminished, and cells were found which appeared to be transitional forms between the chief and the parietal cells. The *muscularis mucosæ* contained considerable pigment in the second case but none in the first.

A review of the appearances seen in the different cases shows that though alike in some respects they differ much in others. There was no migration of leucocytes through the superficial epithelium in the case of tuberculosis. The number of the parietal cells was diminished in typhoid fever, but an instance of their absence could not be determined. The advance of the food

cells out of the connective tissue into the glands indicated that these cells, under diseased conditions, entered into some relation with the glandular cells; but it is still doubtful whether for furnishing nourishment to the degenerated glandular cells, or for removing the products of decomposition going on in them, or for other purposes. The presence of pigment in the *muscularis mucosæ* appears to occur in cases in which the stomach has frequently before been exposed to injurious influences.

ON THE MODIFICATION OF THE GASTRIC FUNCTION OF THE STOMACH.

As a result of experimental and clinical studies, FERRANINI (*Munch. med. Wochenschrift*, February 18, 1890) comes to the following conclusions:

1. Purely nervous gastropathies are excessively rare.
2. Disturbances of chemism or of secretion may be present alone, but motor disturbances and affections of absorptive power are always attended by affected secretion.
3. The most frequent functional disorder of the stomach is hyperacidity of the gastric juice.
4. In hyperacidity of the gastric juice the symptoms are related in part directly to the increased amount of hydrochloric acid present, and the increase of the antifermentative action; in part to the cause whose result the hyperacidity is.
5. Cases of hyperacidity in which the motility and the power of absorption are normal, or only the motility is disturbed, may rest on a purely nervous basis. If, however, both of the last-mentioned functions are involved, the case is one of beginning chronic gastritis.
6. Hyperacidity may be purely primary, but in chronic gastritis it, like the other functional disturbances mentioned, is the result of an anatomical lesion.
7. In hyperacidity of a purely nervous origin the diminished motility is improved if the acid gastric secretion be neutralized. If, on the other hand, it is due to chronic gastritis, the neutralization is without effect.
8. In gastric ulcer hyperacidity is the most constant symptom; and the other disturbances attending it permit of a conclusion whether chronic gastritis is also present.
9. Simple chronic gastritis is to be distinguished from atrophic and sclerotic gastritis by the absence in the latter of the hydrochloric acid, pepsin, and lactic ferments, the abolition of the power to dissolve starch, the possibility of the solution of albumin under the influence of lactic and butyric acids, and the diminution of the power of absorption and of the motility.
10. This simultaneous existence of the alterations in the different functions of the stomach offers no criterion for the assumption of the presence of a carcinoma.